



Nashville & Davidson County Long-term Zero Waste Master Plan

nashville.gov/Public-Works/Solid-Waste-Master-Plan

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Metro Nashville Public Works



Nashville & Davidson County Long-term Zero Waste Master Plan

- How did it come about?
 - FEAR....and a desire for proactive planning. 😊
- Landfill space is dwindling.
- Livable Nashville recommended Zero Waste.



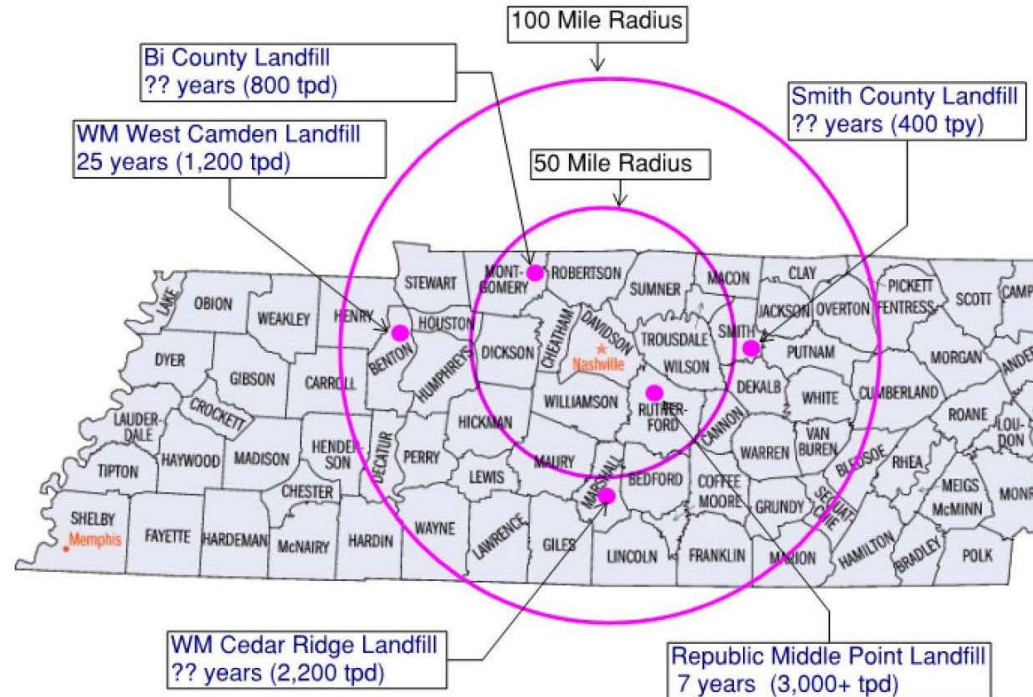
What is Zero Waste

- Systematic and holistic approach to waste prevention rather than waste disposal.
- Materials are valuable, looked at as a resource and products are designed to be used, reused, repurposed and recycled.

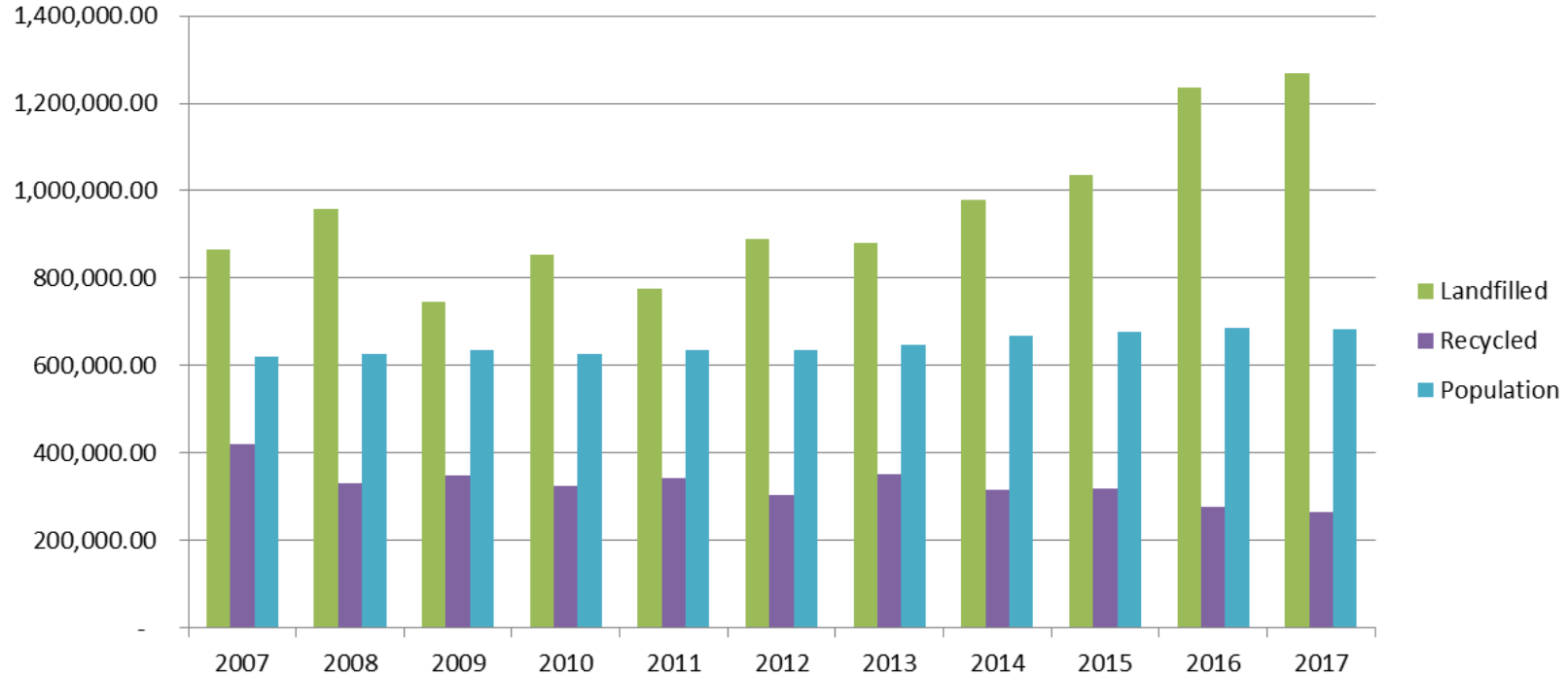




Why Zero Waste



Why Zero Waste





Nashville & Davidson County Long-term Zero Waste Master Plan



- RFP and CDM Smith was awarded the contract.
 - Mayors administration provided the funding for the plan.
 - TDEC complemented the planning process with consultation and funding for the recycling and waste characterization studies.
- The CDM Smith a team of people from all over the nation that have worked on various projects with zero waste cities.
- They brought together their expertise and did further research on best practices... then they started doing research on our current systems.
- We involved the solid waste community through the task force and now are opening it up for public meetings.
- Some recommendations have been that will be in the plan made but no final ones and we'll have the final plan after input from community at large.



Nashville & Davidson County Long-term Zero Waste Master Plan



Purpose of the Master Plan

- Evaluate existing system
- Provide options for improving and enhancing the system

Addresses

- All aspects of Nashville & Davidson County's waste management:
 - Urban Services District & General Services District
 - Residential & commercial waste
 - Collection and processing options



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Detailed in the plan

- Evaluation data of the current solid waste management system
- Plan that details how the Metro region can meet and exceed the requirements of the State of Tennessee 2025 Material Management Plan
- Recommendations on how to increase waste reduction, reuse and recycling
- Detailed waste reduction and diversion plan to achieve zero waste



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Tasks

- Research
- Waste Characterization
- Public Engagement
- Evaluation
- Cost Studies
- Recommendations and goals: minimum, key target benchmarks at 5, 10, 20 and 30 years.



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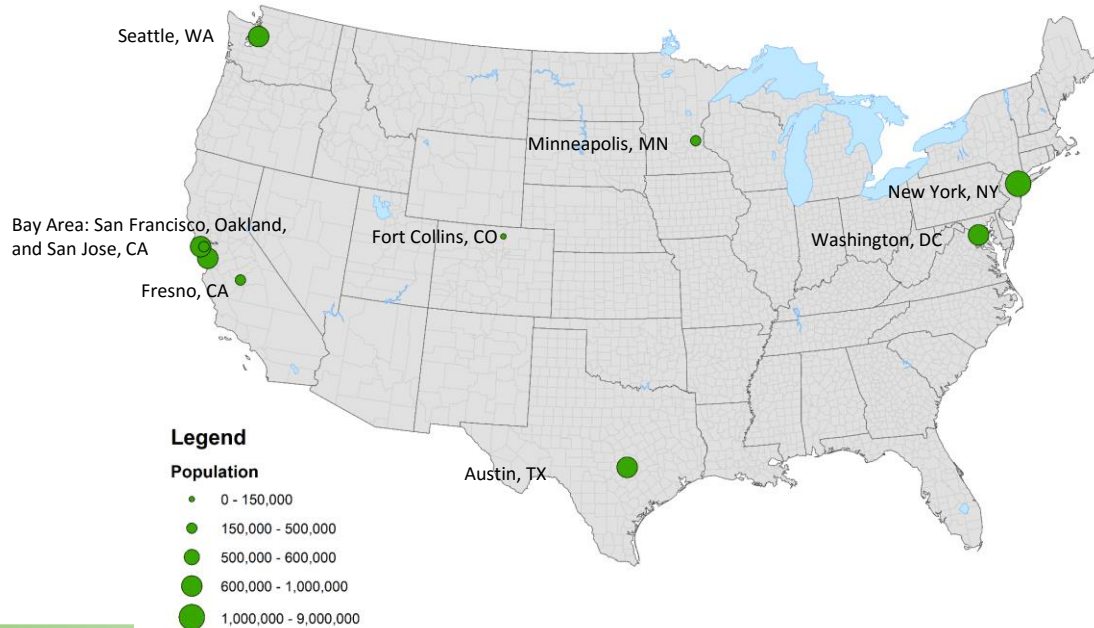
Task 1: Research – Current Best Practices

- Residential : single and multi-family
- Commercial
- Construction & Demolition
- Organics: Water services, Anerobic Digestion, Open Air, etc.



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Cities with Outstanding Zero Waste Programs





Task 2: Waste Characterization



Step 1 – Take a random sample & record the type of waste (residential, commercial, industrial, etc.) and location in Nashville

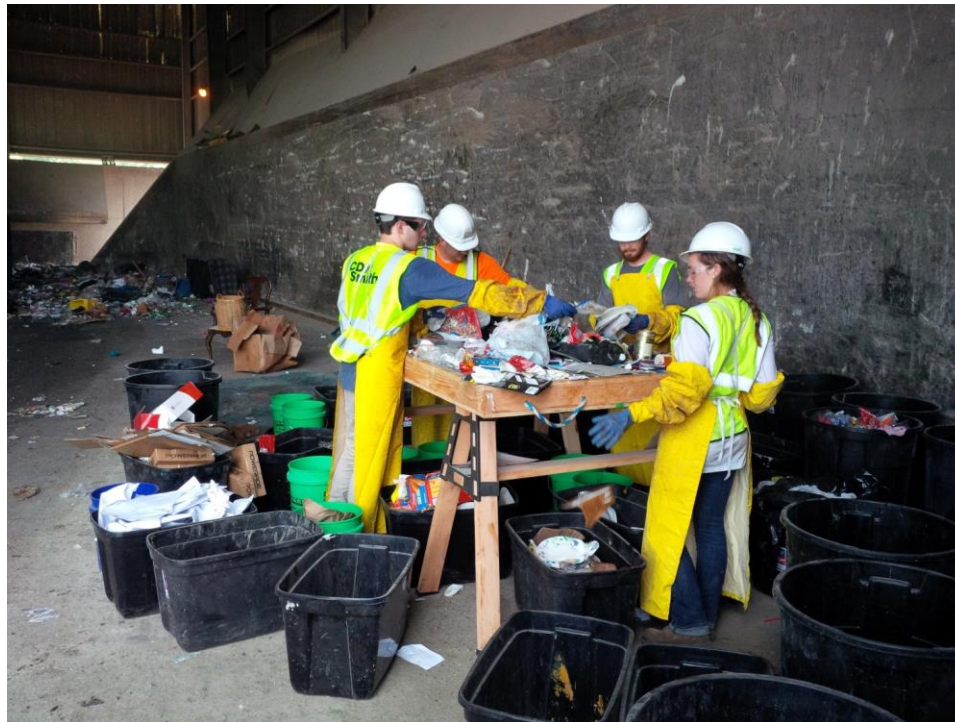


Step 2 – Place sample on sorting table



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Waste Characterization



Step 3 – Sorted items placed in containers by material type





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Waste Characterization





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Waste Characterization

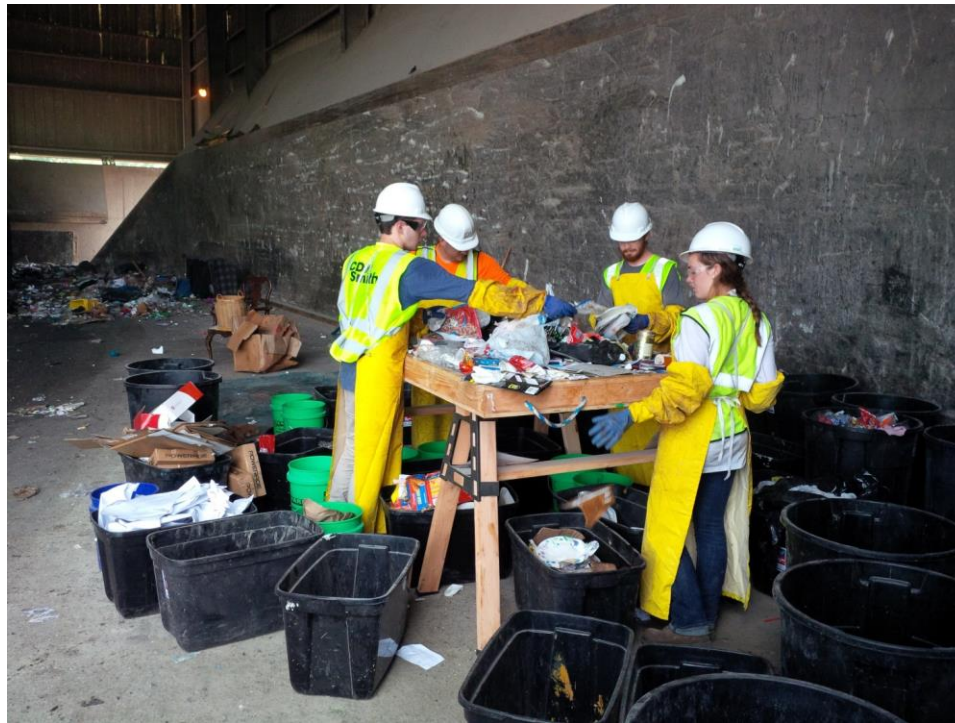


Step 3 – Sorted items placed in containers by material type



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Waste Characterization



Step 3 – Sorted items placed in containers by material type



Waste & Recycling Characterization Study



- Understanding of the disposal and recycling habits of the Metro Nashville area (i.e.; USD vs GSD)
- Comparison to metropolitan areas in the region and across the US
- Target waste materials that will provide the most landfill diversion
- What materials are being recycled?
- What materials are not being recycled?
- What materials are contaminating the recyclables?



Metro Nashville Waste Characterization Categories

Material Group			Material Group		
PAPER	1	Newsprint	ORGANICS	29	Yard Waste - Compostable; leaves, grass, branches <0.5"
	2	High Grade Office Paper		30	Yard Waste - Woody; branch >0.5"
	3	Magazines/Catalogs		31	Food Scraps
	4	Uncoated OCC		32	Bottom Fines and Dirt
	5	Kraft		33	Diapers
	6	Boxboard		34	Other Organic
	7	Mixed Paper - Recyclable	METALS	35	Aluminum Beverage Containers
	8	Compostable Paper and 'other' paper		36	Other Aluminum
	9	Milk and Juice cartons/boxes, coated		37	Ferrous containers (bi-metal cans)
PLASTICS	10	#1 PET Bottles/Jars		38	Aerosol cans
	11	#1 Other PET Containers & Packaging		39	Other Ferrous
	12	#2 HDPE Bottles/Jars - Clear		40	Other Non-Ferrous
	13	#2 HDPE Bottles/ Jars - Color		41	Other Metal
	14	#2 Other HDPE Containers & Packaging	TEXTILES	42	Carpet and carpet padding
	15	#6 Expanded Polystyrene Packaging (EPS)		43	Clothing and other textiles
	16	#3-#7 Other - All	C&D	44	Construction and Demolition materials
	17	Other Rigid Plastic Products		45	Televisions
	18	Grocery & Merchandise Bags	MISC INORGANICS	46	Computer Monitors
	19	Trash Bags		47	Computer Equipment/ Peripherals
	20	Commercial & Industrial Film		48	Electronic Equipment
	21	Other Film		49	Household bulky items, batteries, tires, fluorescents, other misc. organics
	22	Remainder/ Composite Plastic	HHW	50	Household Hazardous Waste materials
GLASS	23	Glass Bottles and Jars - clear			
	24	Glass Bottles and Jars - brown			
	25	Glass Bottles and Jars - green			
	26	Glass Bottles and Jars - blue			
	27	Flat Glass			
	28	Other Glass			

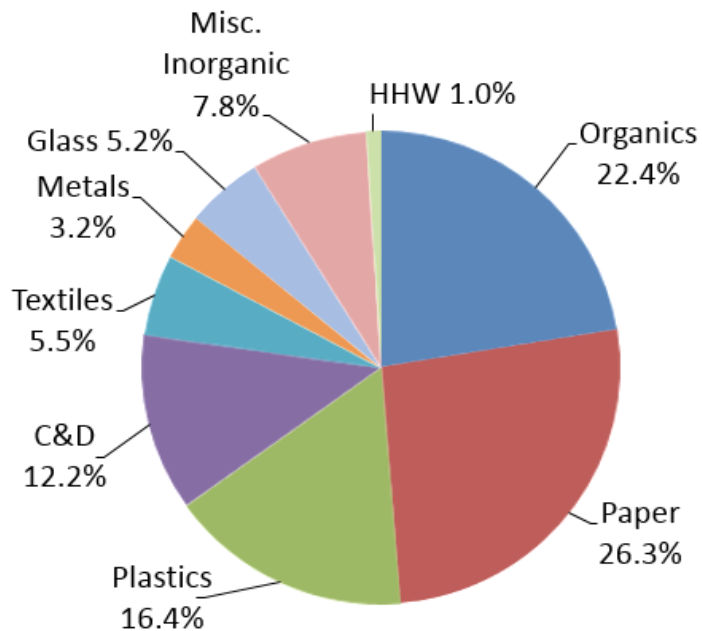


Waste Characterization

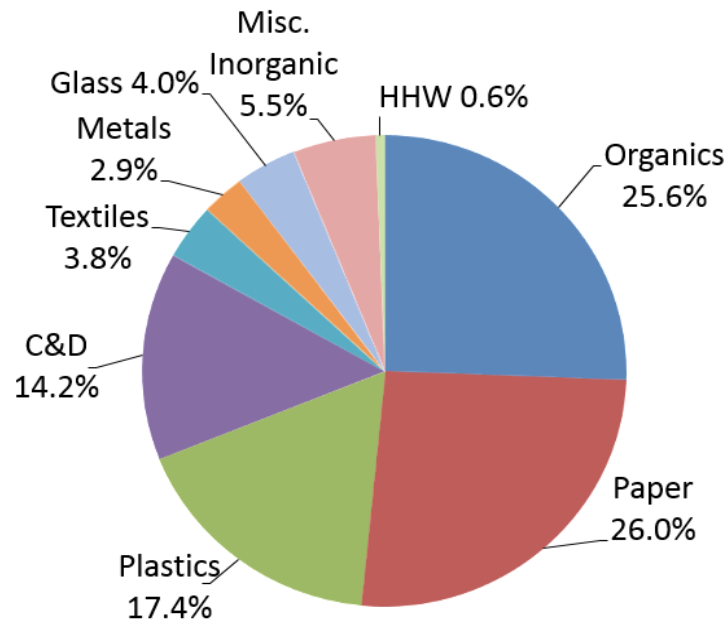
Landfilled Waste Profile: USD vs. GSD



- Waste compositions are similar for the two districts



USD (Res+Com)

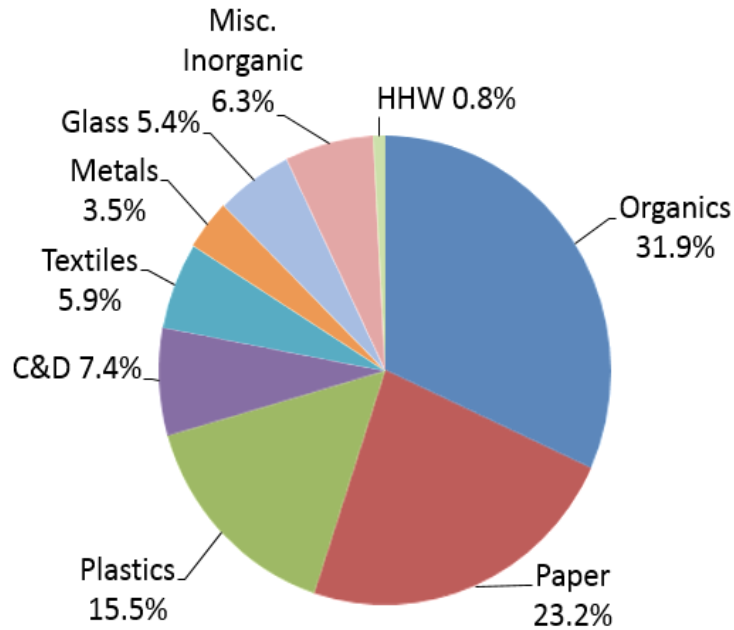


GSD (Res+Com)

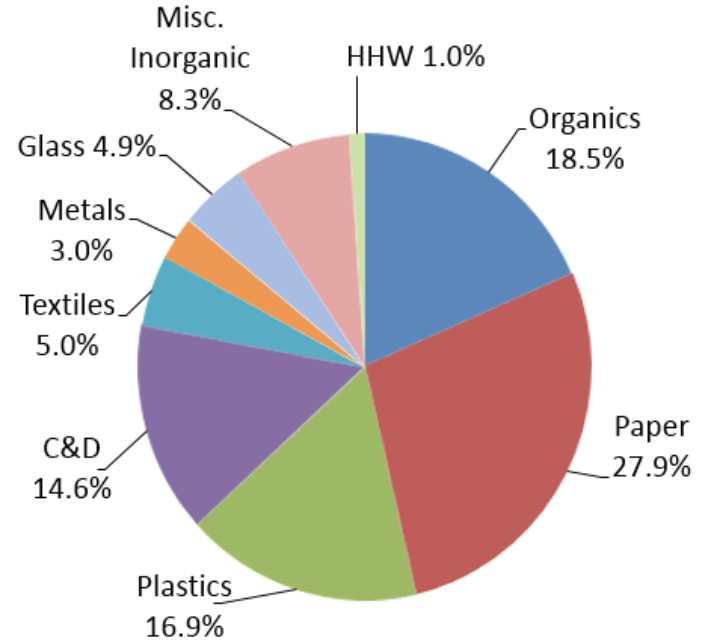
Landfilled Waste Profile: Residential vs. Commercial



- Residential has much higher Organics content
- Commercial has higher C&D content



Residential

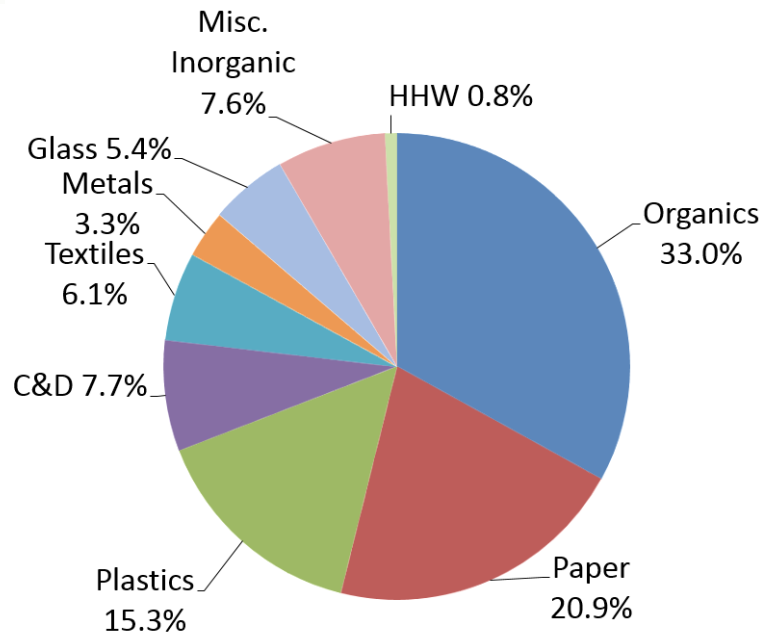


Commercial

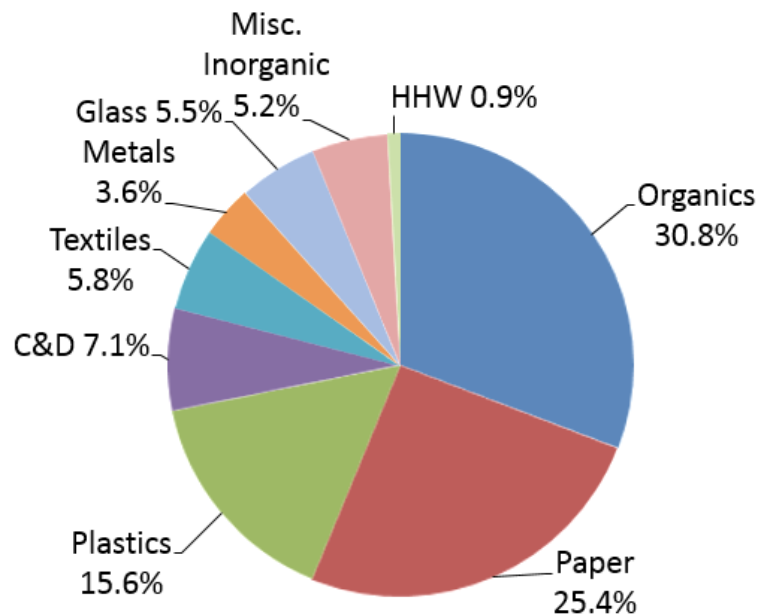
Landfilled Waste Profile: Summer vs Fall



- Residential has higher Organics content
- Commercial has higher C&D content



Summer



Fall

Top Ten Components of Landfilled Waste



- More than 1/3 of Residential Landfilled Waste is Organics
- More than 1/3 of Commercial Landfilled Waste is C&D, Food and Cardboard

Category	Waste Composition %
Food Scraps	20.8%
Compostable Paper	9.3%
Construction and Demolition	7.4%
Household bulky items	5.1%
Clothing and other textiles	5.1%
Diapers	3.7%
Uncoated OCC	3.5%
Other Organic	3.2%
Yard Waste	3.1%
Glass Bottles and Jars - clear	3.0%
Total	64.3%

Residential Landfilled Waste

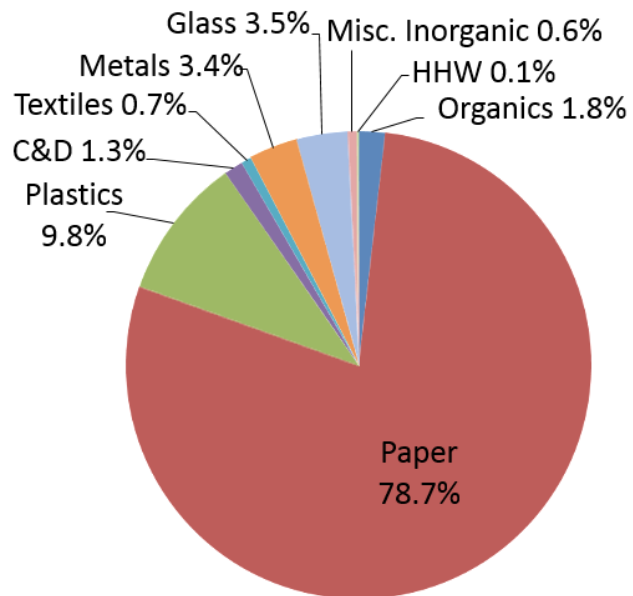
Category	Waste Composition %
Construction and Demolition	14.6%
Food Scraps	12.7%
Uncoated OCC	10.1%
Compostable Paper	9.4%
Household bulky items	6.6%
Clothing and other textiles	4.6%
Boxboard	3.6%
Trash Bags	2.4%
Other Film	2.3%
Yard Waste	2.3%
Total	68.5%

Commercial Landfilled Waste

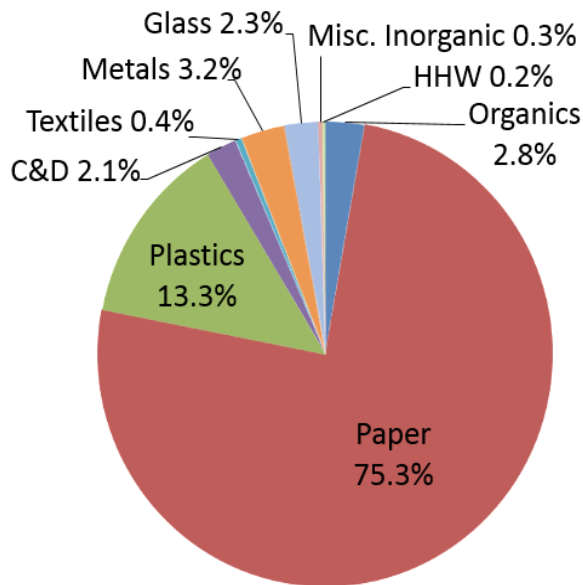
Recycled Waste Profile: USD vs. GSD



- Both districts are nearly 40% cardboard
- Contaminant levels are comparable (both approx. 11%)



USD (Res+Com)



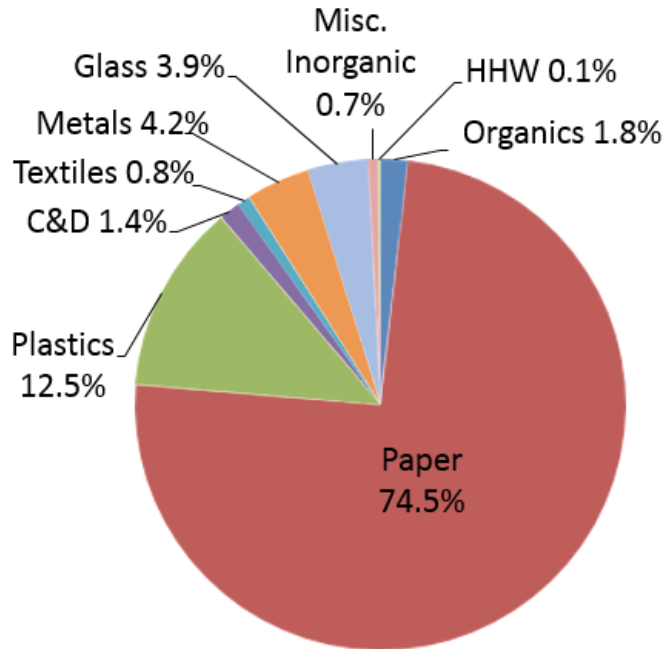
GSD (Res+Com)



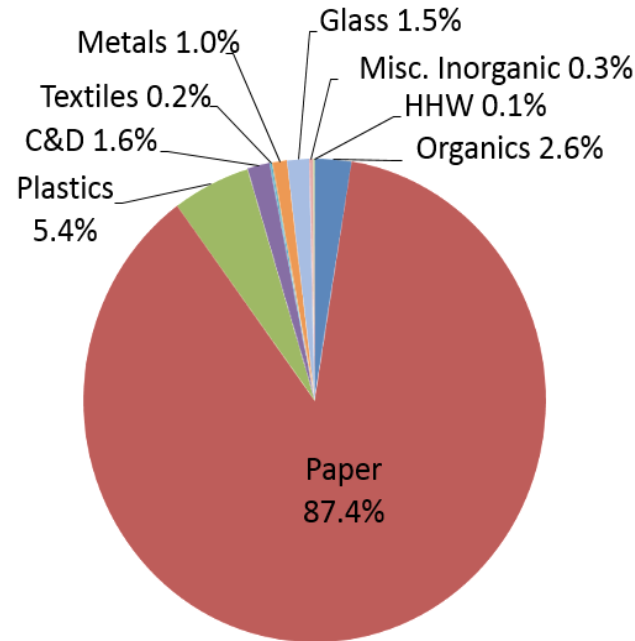
Recycled Waste Profile: Residential vs. Commercial



- Both are high in Paper by there is twice as much cardboard in Commercial
- Residential is higher in plastics, magazines and newsprint



Residential



Commercial



Top Ten Components of Recycled Waste



- More than 1/4 of Residential Recycled Waste is Cardboard
- More than 2/3's of Commercial Recycled Waste is Cardboard

Category	Waste Composition %
Uncoated OCC	26.1%
Magazines/Catalogs	11.9%
Newsprint	10.8%
Boxboard	8.3%
Mixed Paper	6.4%
High Grade Office Paper	5.4%
#1 PET Bottles/Jars	3.8%
Compostable Paper	3.2%
Kraft	1.9%
Aluminum Beverage Containers	1.6%
Total	79.5%

Residential Recycled Waste

Category	Waste Composition %
Uncoated OCC	68.2%
Boxboard	6.1%
High Grade Office Paper	4.9%
Magazines/Catalogs	3.8%
Food Scraps	2.1%
Compostable Paper	1.6%
C&D Materials	1.6%
Other Film	1.4%
Mixed Paper	1.2%
Glass Bottles and Jars - Clear	1.1%
Total	91.9%

Commercial Recycled Waste

Top Contaminants of Recycled Waste



- Residential: Has higher level of contaminants than Commercial
- Commercial: Food service businesses have highest contaminant levels

Category	Waste Composition %
Glass	3.9%
Compostable Paper	3.2%
C&D	1.4%
Food Scraps	1.0%
Clothing	0.8%
Batteries and Bulbs	0.7%
Total	11.0%

Residential Recycled Waste

Category	Waste Composition %
Food Scraps	2.1%
Compostable Paper	1.6%
C&D	1.6%
Glass	1.5%
Electronics	0.3%
Clothing	0.2%
Total	7.3%

Commercial Recycled Waste



Task 3: Public Engagement



- Prior to this process, Livable Nashville
- Quarterly Task Force meetings
- Open Solid Waste Board Meetings – also televised
- Survey – mailed invitation to some and on-line invitation to all
- Open public meetings



Open Meetings



- Purpose: educational and gathering input
- Publicize through council, editorials, PR, online, social media
- Stations with information and opportunity for input supervised by CDM Smith and Public Works employees
- Zero waste meeting



Task 4: Evaluation

- What we have, what we should have based on best practices
- Cost and benefit analysis
- Possible Regional Partnerships
- Challenges and Opportunities



What the Best Zero Waste Programs have in Common



Pay-as-you-throw



Strong public education and outreach programs



Adoption of waste reduction policies and mandates that promote zero waste



State commitment towards zero waste to enlarge reach of program deployment



Establishing metrics for measuring success



Commitment expressed through budgetary approval

Task 4: Cost studies



- As part of overall plan, cost analysis and how services can ultimately be revenue streams
- Recommendations on how we can begin to take on costs on improving our systems
- Triple bottom line – Profits, people, planet

Funding Structure Challenges



- General Fund limitations
 - Metro Charter doesn't allow separate charges for waste collection or disposal
 - Charter amendment required to implement new fees
- Lack of revenue generating facilities
- Funding options to consider
 - Countywide annual household fees
 - Self-funding programs
 - Public-private partnerships
 - Enterprise Fund



Task 6: Recommendations and Goals

- To come: target benchmarks at 5, 10, 20 and 30 years.
- Currently looking at how we can increase diversion rates based on best practices derived from other cities implementing zero-waste.



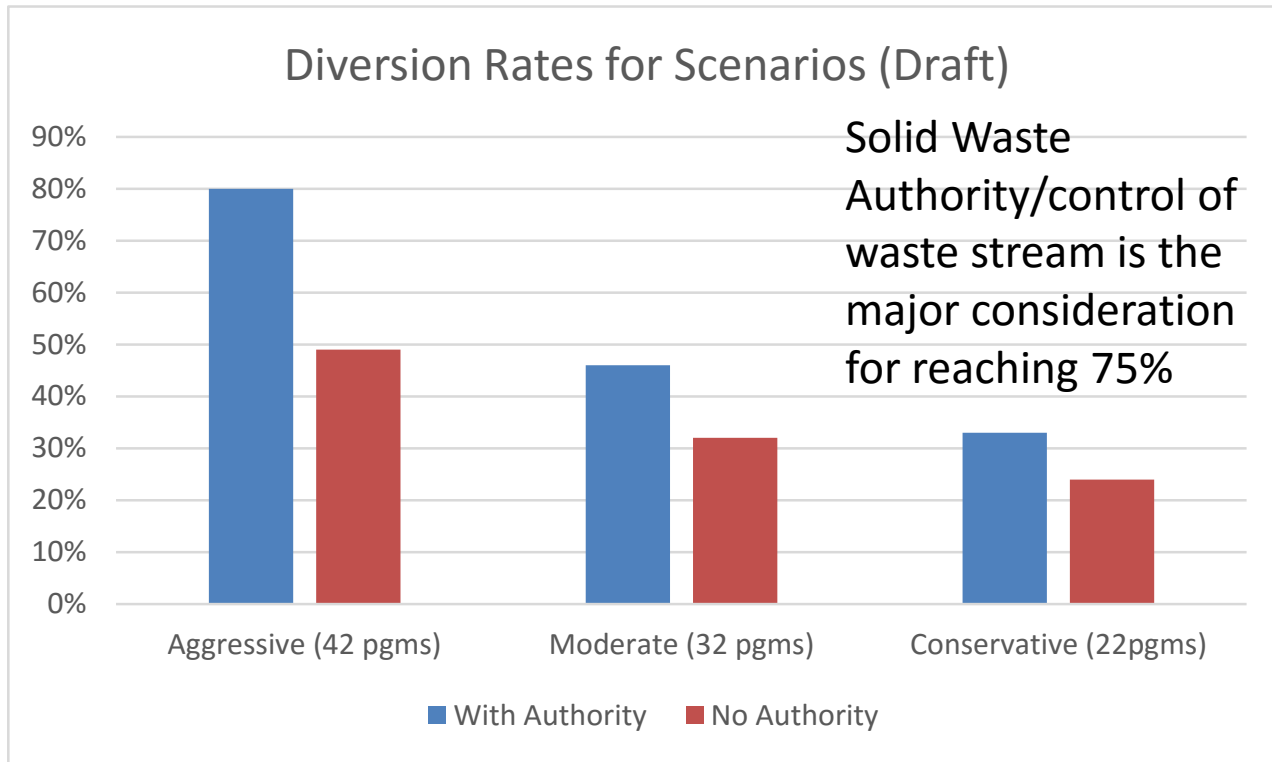


Best Management Practices on 75% Diversion



- Authorities
- Tracking – private haulers
- Residential & Commercial SAYT
- ABC Law – requiring vendors to be responsible.
- Enforce Existing Bans & Add Additional
- C&D Deposit System when permit issued and enforced
- Surcharge Increases on MSW and C&D
- Multi-Family Pilots
- Franchise Agreements

GETTING TO 75% - THREE SCENARIOS





BMP on 90% Diversion

- Legislation
 - CD Deconstruction & Reuse
 - Purchasing requiring Recycled Content
- Recycling Economic Development
 - Eco-Business Park to keep resources local
- Research & Development on Recycling Technologies
- Expand Processing Facilities
- Public Education - continual





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Progress To Date

- Waste Characterization Complete
- Planning Process Near Completion
- Public Meetings June 2018
- Organics Management Grant
 - Residential Organics Drop-off Program
 - Backyard Composting Workshops & Free Earth Machine Compost Bins
- Waste Reduction Grant
 - Neighborhood Ambassadors
- Overhaul of recycling ed to show impact
- Honky Tonk Glass Recycling
- Recycling Expansion
- Regional Meetings and Collaboration





Questions?

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Thank You!



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